



AN ANALYSIS THE NON-PRACTICING ENTITY (NPE) THREAT:

PATENT SOURCES AND LITIGATION TARGET CHARACTERISTICS

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TABLE OF CONTENTS

1.0 Introduction	1
2.0 Study Objectives and Key Questions	2
3.0 Methods and Data Sources	5
4.0 Sources of Patents Used by NPEs in Litigation	7
5.0 NPE Targets by Industry Classification	12
6.0 NPE Targets by Company Size and Patent Holdings	16
7.0 The Relationship Between Target IPOs and NPE Litigation	21
8.0 The Relationship Between Funding Rounds and NPE Litigation	22
9.0 Conclusions	24
10.0 Citations	25

1.0 INTRODUCTION

Non-Practicing Entities (NPEs) are companies that acquire patents in order to assert them against other companies. NPEs do not make goods or services and do not conduct R&D – are a continuing challenge for industry. Responding to NPE lawsuits, and potentially negotiating licenses to utilize the patented technologies in question, is expensive and time-consuming. Particularly for firms that do not have the in-house legal resources to address NPE threats, addressing an unexpected NPE lawsuit can be a significant distraction.

Recent data indicate that, while patent litigation initiated by operating companies has declined in recent years, NPE-initiated lawsuits held steady in 2022 versus 2021, and have increased steadily since 2016, due in large part to the number of assets for sale on the open market and availability of litigation funding. [1] [2] [3]

Within the high-technology sector in particular, litigation initiated by NPEs represents the majority of all patent litigation, as much as 88 percent according to some sources. Across all industry sectors, NPEs are responsible for almost 60 percent of all patent litigation – a huge cost to operating companies. [4]

Another troubling trend for operating companies in the overall patent-litigation domain is the increasing diversification of litigation financing. NPEs are no longer necessarily constrained in the scope of their activities by the availability of internal financial resources – they are becoming able to tap external sources of capital made available to them in return for a share of downstream awards in patent-infringement lawsuits that target operating companies. [5] [6]

The companies most frequently named as first defendants in patent litigation are Samsung, Google, Apple, and Amazon, followed by other large technology and pharmaceutical firms with deep pockets. [7] A significant question, however, which bears further investigation, is whether the threat posed by NPEs is primarily limited to large players operating in these sectors, or whether smaller companies operating across multiple industry sectors also are at significant risk of emerging as targets.

In this study, we seek to understand the origins of the patents that NPEs are utilizing in their patent-monetization campaigns, and to characterize the nature and the scope of the risks that NPEs present.

2.0 STUDY OBJECTIVES AND KEY QUESTIONS

LOT Network asked HighTech-Solutions (HTS, LLC) to investigate the litigation activity of Non-Practicing Entities (NPEs), using data provided by Unified Patent regarding litigations initiated by NPEs over the period 2017 - 2022. Primary objectives of the study were to identify the most prevalent sources and types of patents used in NPE lawsuits, and the characteristics which make a company more or less likely to become the target of such a suit.

Among the key questions HTS investigated in this study were the following:

- What categories of companies provide the most patents used in NPE lawsuits [who, in other words, is divesting the patents that NPEs most frequently deploy?]
- Which individual operating companies are the largest sources of patents used in NPE lawsuits?
- Are there correlations between such company characteristics as industry sector, annual revenue, number of employees, and number of patents held that make firms more likely to be the targets of NPE lawsuits? [What puts a company at higher risk to become a target?]
- Is there a correlation between the date that a company conducts an initial public offering (IPO), and the likelihood that the firm will be the target of a NPE lawsuit? [Does going IPO put companies at higher risk to be targeted by NPEs?]
- Is there a correlation between the dates of funding rounds for non-publicly traded companies, the sizes of the funding rounds, and the likelihood that a company will be the target of a NPE lawsuit? [Is there a minimum valuation or minimum funding level that causes a company to become a more attractive target for NPEs?]

3.0 METHODS AND DATA SOURCES

3.1 Study Data Sources and Analytical Tools

The data set that Unified Patents provided to HTS to seed this study comprised entries on 6,161 defendants who have been sued by a Non-Practicing Entity (NPE) over the period 2017-2022.

In conducting its analysis, HTS used several systems and data sources.

- The S&P Global Capital IQ database, which provides profiles for and information on over 62,000 public companies and 4.4 million private companies worldwide, as well as data derived from financial statements and transactions information, including mergers & acquisitions and private placements.
- AcclaimIP – a commercially available patent search tool.
- The HTS Cybermetric ® Tool Suite – a patent categorization and data analytics tool suite developed by HTS that makes central use of technology taxonomies as an organizing principle.

3.2 Study Methods

HTS' first step was to conduct a detailed review of the litigation data received from Unified Patents, which resulted in the identification of some cases that required cleanup. These included a small number of data anomalies and over 330 individuals with known and unknown identities, who clearly were not corporate entities (in many cases, the related lawsuits involved one individual suing another). HTS identified and removed such items from the list and proceeded to map the remaining company names to their unique company identifiers in the S&P Global Capital IQ database.

The resulting company identifier matches were carefully reviewed for accuracy based on company business descriptions, headquarters addresses, etc. For companies that did not have matches based on the initial search terms, HTS performed additional research and ran additional searches using alternative search terms or company names. The resulting statistics are as follows:

	Count	% of Total
Total List	6,161	100.0%
Individuals on List	339	5.5%
Data Anomalies on List	1	0.0%
Companies Not Matched in CIQ	857	13.9%
Companies Matched	4,964	80.6%

The individuals who appeared on the list and the data-anomaly case (a “company” that appeared with the name “;”) were removed and not subjected to further analysis. As will be described below, the 857 companies for which no match could be identified in the Capital IQ database were included in most aspects of our analysis, where they could be attributed to appropriate company categories using sampling techniques.

4.0 SOURCES OF PATENTS USED BY NPEs IN LITIGATION

It is well known that in some circumstances operating companies divest patent portfolios to NPEs, typically taking a “license back” so that the purchasing NPE, or any subsequent owner, cannot target the seller of a portfolio. It is also not unusual for the selling operating company to negotiate with the NPE who purchases their patents for a share in the proceeds that the NPE achieves in asserting infringement. After purchasing a patent portfolio from an operating company, NPEs then often use these patents to file lawsuits for infringement against other operating companies.

4.1 Original Assignees (Patent Owners) by Annual Revenue

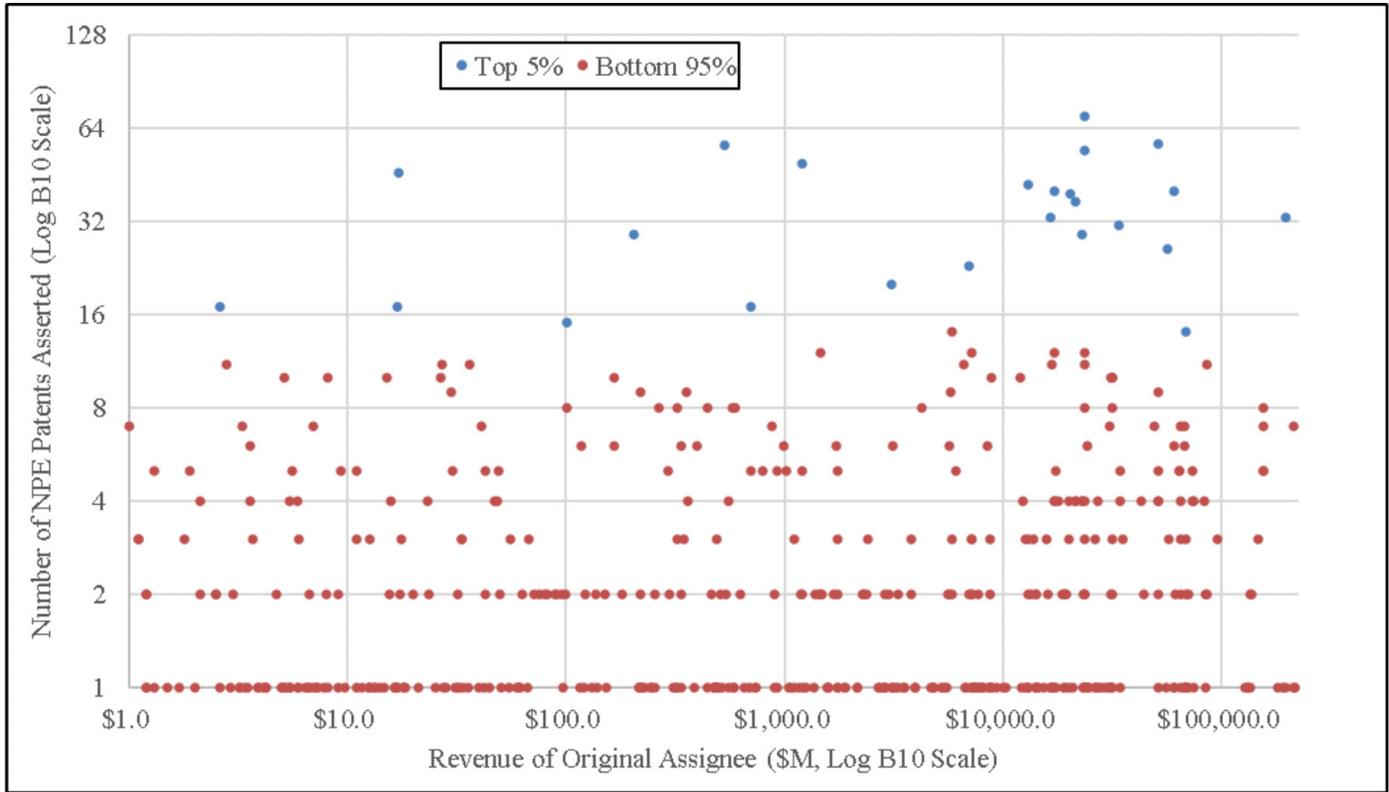
In order to gain insight into which operating companies are selling the patents most frequently deployed in NPE-initiated litigation, we took the set of patents in the Unified Patents data-set that had been asserted in at least one litigation and investigated the relationship between the number of patents derived from each original “assignee” (the original owners of the patents, who made a sale that ultimately placed the patents under the control of NPEs), and company size measured on the basis of annual revenue.

As one can see in Figure 1, there are cases seen on or close to the Y-axis in the plot, where patents that derive from original owners with little or no revenue have been involved in NPE litigation, and there are many cases where the original owners had less than a modest \$10 million in annual revenue. In four of these sub-\$10 million instances, more than eight patents deriving from the source company were used in NPE litigation. These “Y-axis cases” would be those where a start-up, or perhaps a distressed firm which finds itself unable to successfully bring a product to market, sells some or all of its patents.

As one can also see, however, in the great majority of cases, the patents NPEs use in litigation derive from operating companies with substantial revenue, including more than 10 cases where the selling original owner has annual revenues in excess of \$100 billion per year (the revenue figures presented are based on the last year of reported revenue).

The numerous cases that fall on the X-Axis are those where only a single patent derived from the original owner in question was deployed in NPE-initiated litigation.

Figure 1: NPE Patents Asserted by Original Assignee Revenue

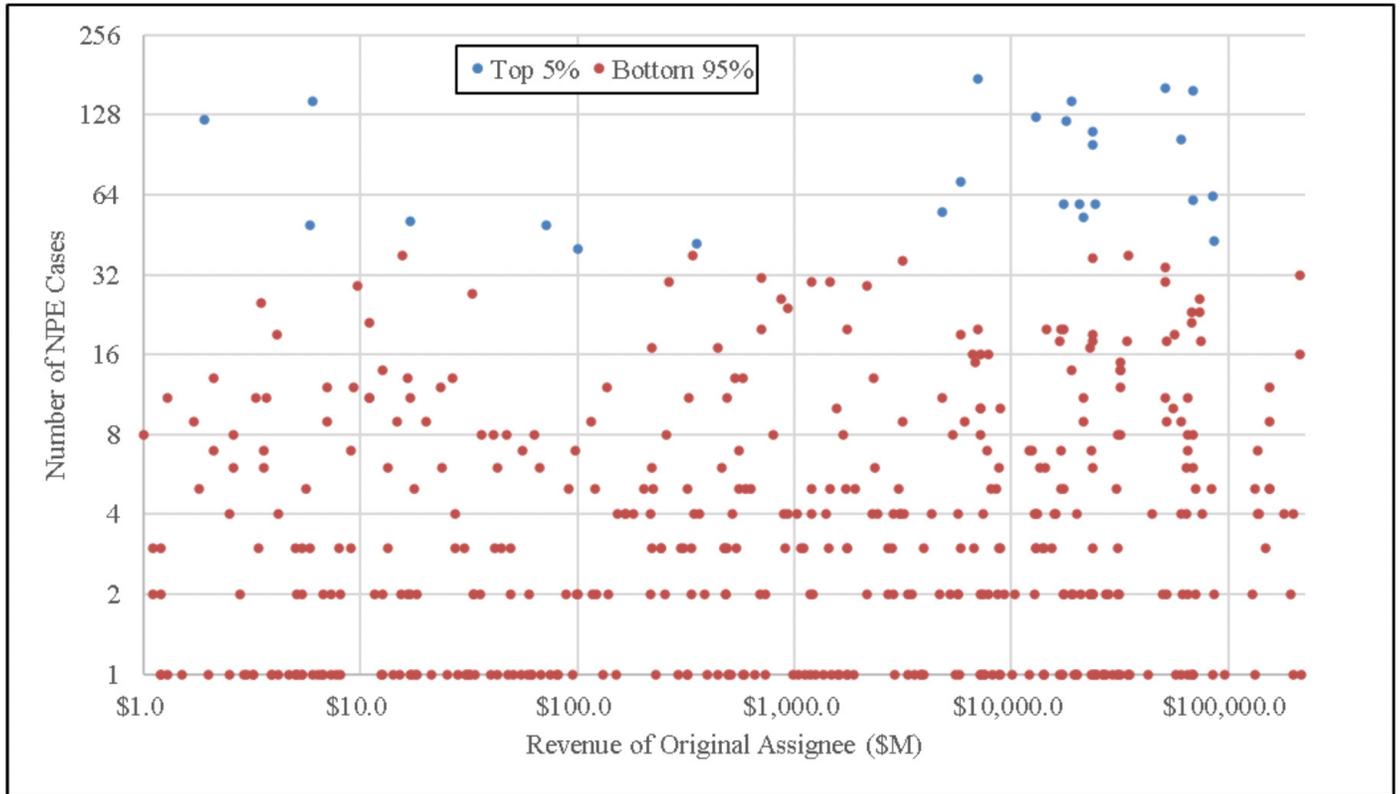


We conducted a similar analysis that measured the number of NPE-filed lawsuits that derived from the patents of an original owner, as opposed to measuring the patents themselves, and compared the number of lawsuits with company size based on annual revenue. See Figure 2 for the findings.

This analysis produced findings parallel to those generated by the analysis based on patent count.

Again, we do have companies along the Y-axis – those with little or no revenue – whose patents are employed in multiple NPE lawsuits, and patents from two such companies were actually used in over 120 separate litigations. However -- and this is also similar to the findings based on patent count -- the substantial majority of NPE-initiated lawsuits are based on patents provided by original owners that have significant or huge annual revenues.

Figure 2: NPE Cases by Original Assignee Revenue



4.2 Corporations Who Feed the NPE Pipeline

We also asked the question -- Who are the usual sellers? Which are the operating companies who are most frequently the original owners for patents used by NPEs in litigation?

Figure 3 provides a list of the 25 operating companies who are the sources of the most patents that were used in NPE litigation for the period 2017 – 2022. As one can see, all but six have over \$1 billion in annual revenue, and 15 are over \$10 billion.

Figure 3: Original Owners of Top 5 Percent of NPE Patents Asserted 2017 – 2022 That Derive From Operating Companies, With Original Owner Revenue

Original Owner	Original Owner Ultimate Parent Revenue (\$M)	Distinct Count of Patents [3]
Panasonic Holdings Corporation	\$51,281.20	90
Alcatel-Lucent	\$23,816.50	81
Nokia Oyj	\$23,816.50	77
Electronics and Telecommunications Research Institute	\$531.50	57
Koninklijke Philips N.V.	\$17,305.70	54

Original Owner	Original Owner Ultimate Parent Revenue (\$M)	Distinct Count of Patents [3]
Eastman Kodak Company	\$1,205.00	49
Aware, Inc.	\$17.10	47
International Business Machines Corporation	\$60,535.00	46
Cypress Semiconductor Corporation	\$13,049.40	42
NEC Corporation	\$20,470.00	41
Advanced Micro Devices, Inc.	\$21,576.00	37
SEVEN Networks, Inc.	\$8.10	34
LG Electronics Inc.	\$56,554.70	34
Sharp Corporation	\$16,570.70	33
Microsoft Corporation	\$198,270.00	33
Toshiba Corporation	\$23,035.00	29
Atmel Corporation	\$7,215.10	27
Xerox Corporation	\$6,950.00	25
Research In Motion Corp.	\$705.00	23
Visteon Global Technologies, Inc.	\$3,083.00	20
Nokia of America Corporation	\$23,816.50	18
U.S. Philips Corporation	\$17,305.70	17
Fractus S.A.	\$2.60	17
Siemens Aktiengesellschaft	\$68,678.30	16
Bandspeed, Inc.	\$0.90	13

These 25 operating companies account for approximately 42 percent of the patents that were used by NPE's in litigation over the 2017 – 2022 period.

Figure 4 provides a similar list of 25 entities whose patents were deployed in the most NPE lawsuits over the period. Again, all but three are multi-billion dollar corporations. That said, patents from, for example, Aware, Inc., with \$17.1 million in annual revenues were used in 61 litigations, and those from Mustek Systems, Inc., with only \$5.9 million in annual revenues, were used on 56 occasions.

Figure 4: Operating Companies Whose Patents Were Used in Top 5 Percent of NPE Cases 2017 – 2022, With Original Assignee Revenue

Original Owner	Original Owner Ultimate Parent Revenue (\$M)	Distinct Count of Docket Number [4]
Panasonic Holdings Corporation	\$51,281.20	193
Xerox Corporation	\$6,950.00	180
Siemens Aktiengesellschaft	\$68,678.30	167
Koninklijke Philips N.V.	\$17,305.70	158
SAVVIS Communications, LLC	\$19,022.00	150
Nokia Oyj	\$23,816.50	142
Cypress Semiconductor Corporation	\$13,049.40	138
Alcatel-Lucent	\$23,816.50	131
KT Freetel Co., Ltd.	\$17,846.40	127
International Business Machines Corporation	\$60,535.00	112
Symagery Microsystems Inc.	\$5,803.00	77
U.S. Philips Corporation	\$17,305.70	73
Cognigine Corporation	\$85,042.70	69
Siemens Information and Communication Mobile LLC	\$68,678.30	64
NEC Corporation	\$20,470.00	64
Aware, Inc.	\$17.10	61
Fujitsu Limited	\$24,411.80	60
Snap-on Equipment Ltd.	\$4,793.50	57
Display Technologies, Inc.	\$71.40	57
Mustek Systems, Inc.	\$5.90	56
Advanced Micro Devices, Inc.	\$21,576.00	54
Nokia Mobile Phones Oy	\$23,816.50	45
Atmel Corporation	\$7,215.10	44
3Com Corporation	\$64,857.00	44
Huawei Technologies Co., Ltd.	\$86,274.60	43

These 25 companies, while constituting only four percent of the providers of patents used in NPE lawsuits, have sold patents to NPEs that account for 41 percent of the NPE lawsuits during the period 2017 – 2022.

5.0 NPE TARGETS BY INDUSTRY CLASSIFICATION

In order to gain insight into which industry sectors the companies most frequently targeted by NPE lawsuits operate in, HTS analyzed the companies in the refined Unified Patents data-set by SIC (Standard Industrial Classification) code.

When we categorized the target companies in the data-set by the portion of the SIC code that defines the broadest industry sectors, which is reflected in the initial letter of the code and indicates SIC "Division," the break-out was as presented in Figure 5.

Figure 5: NPE Targets by SIC Division Classification

SIC Industry Division - Ultimate Parent Company	Company Count	% of Total
Manufacturing	1,470	29.61%
Services	1,132	22.80%
Retail Trade	389	7.84%
Finance, Insurance, And Real Estate	335	6.75%
Transportation, Communications, Electric, Gas, and Sanitary Services	326	6.57%
Wholesale Trade	268	5.40%
Public Administration	36	0.73%
Construction	27	0.54%
Mining	24	0.48%
Agriculture, Forestry, And Fishing	8	0.16%
Data Unavailable	949	19.12%
Grand Total	4,964	100.00%

Thus, over 52 percent of the companies targeted by NPE lawsuits in the last six years are concentrated in two SIC Divisions, Manufacturing and Services. Top companies targeted are those with technology-heavy and consumer-facing products and services.

If we proceed to make the analysis more granular, using the first two digits of the four digit SIC codes, which define SIC "Major Groups," the break-out into industry sectors is as presented in Figure 6 below.

Figure 6: NPE Targets by SIC Major Group Classification

SIC Industry Division	SIC Division (HTS)	Company Count	% of Total
Business Services	Services	896	18.05%
Electronic And Other Electrical Equipment And Components, Except Computer Equipment	Manufacturing	436	8.78%
Wholesale Trade-durable Goods	Wholesale Trade	247	4.98%
Industrial And Commercial Machinery And Computer Equipment	Manufacturing	219	4.41%
Measuring, Analyzing, And Controlling Instruments; Photographic, Medical And Optical Goods; Watches And Clocks	Manufacturing	215	4.33%
Communications	Transportation, Communications, Electric, Gas, And Sanitary Services	188	3.79%
Miscellaneous Retail	Retail Trade	152	3.06%
Depository Institutions	Finance, Insurance, And Real Estate	126	2.54%
Chemicals And Allied Products	Manufacturing	79	1.59%
Engineering, Accounting, Research, Management, And Related Services	Services	76	1.53%
Transportation Equipment	Manufacturing	72	1.45%
Wholesale Trade-non-durable Goods	Wholesale Trade	66	1.33%
Home Furniture, Furnishings, And Equipment Stores	Retail Trade	66	1.33%
Eating And Drinking Places	Retail Trade	55	1.11%
Miscellaneous Manufacturing Industries	Manufacturing	54	1.09%
Apparel And Accessory Stores	Retail Trade	47	0.95%
Holding And Other Investment Offices	Finance, Insurance, And Real Estate	41	0.83%
Food And Kindred Products	Manufacturing	40	0.81%
Printing, Publishing, And Allied Industries	Manufacturing	35	0.71%
Electric, Gas, And Sanitary Services	Transportation, Communications, Electric, Gas, And Sanitary Services	33	0.66%
Insurance Carriers	Finance, Insurance, And Real Estate	33	0.66%
Food Stores	Retail Trade	30	0.60%
Fabricated Metal Products, Except Machinery And Transportation Equipment	Manufacturing	28	0.56%
Amusement And Recreation Services	Services	28	0.56%
Automotive Dealers And Gasoline Service Stations	Retail Trade	28	0.56%
Security And Commodity Brokers, Dealers, Exchanges, And Services	Finance, Insurance, And Real Estate	25	0.50%
Transportation By Air	Transportation, Communications, Electric, Gas, And Sanitary Services	25	0.50%
Rubber And Miscellaneous Plastics Products	Manufacturing	22	0.44%
Hotels, Rooming Houses, Camps, And Other Lodging Places	Services	21	0.42%
General Merchandise Stores	Retail Trade	20	0.40%

SIC Industry Division	SIC Division (HTS)	Company Count	% of Total
Apparel And Other Finished Products Made From Fabrics And Similar Materials	Manufacturing	19	0.38%
Motion Pictures	Services	19	0.38%
Construction Special Trade Contractors	Construction	17	0.34%
Insurance Agents, Brokers, And Service	Finance, Insurance, And Real Estate	17	0.34%
Real Estate	Finance, Insurance, And Real Estate	15	0.30%
Non-depository Credit Institutions	Finance, Insurance, And Real Estate	15	0.30%
Educational Services	Services	14	0.28%
Building Materials, Hardware, Garden Supply, And Mobile Home Dealers	Retail Trade	14	0.28%
Nonclassifiable Establishments	Public Administration	14	0.28%
Transportation Services	Transportation, Communications, Electric, Gas, And Sanitary Services	14	0.28%
Building Construction General Contractors And Operative Builders	Construction	14	0.28%
Oil And Gas Extraction	Mining	14	0.28%
Furniture And Fixtures	Manufacturing	13	0.26%
Health Services	Services	13	0.26%
Automotive Repair, Services, And Parking	Services	11	0.22%
Water Transportation	Transportation, Communications, Electric, Gas, And Sanitary Services	11	0.22%
Motor Freight Transportation And Warehousing	Transportation, Communications, Electric, Gas, And Sanitary Services	11	0.22%
Paper And Allied Products	Manufacturing	10	0.20%
Executive, Legislative, And General Government, Except Finance	Public Administration	10	0.20%
Primary Metal Industries	Manufacturing	9	0.18%
Leather And Leather Products	Manufacturing	9	0.18%
Personal Services	Services	9	0.18%
Membership Organizations	Services	8	0.16%
Social Services	Services	7	0.14%
Petroleum Refining And Related Industries	Manufacturing	6	0.12%
Stone, Clay, Glass, And Concrete Products	Manufacturing	6	0.12%
Legal Services	Services	6	0.12%
Local And Suburban Transit And Interurban Highway Passenger Transportation	Transportation, Communications, Electric, Gas, And Sanitary Services	6	0.12%
Miscellaneous Repair Services	Services	5	0.10%
Agricultural Production Crops	Agriculture, Forestry, And Fishing	5	0.10%
Textile Mill Products	Manufacturing	4	0.08%

SIC Industry Division	SIC Division (HTS)	Company Count	% of Total
Heavy Construction Other Than Building Construction Contractors	Construction	4	0.08%
Lumber And Wood Products, Except Furniture	Manufacturing	3	0.06%
Tobacco Products	Manufacturing	3	0.06%
Miscellaneous Services	Services	3	0.06%
Agricultural Services	Agriculture, Forestry, And Fishing	2	0.04%
Agriculture Production Livestock And Animal Specialties	Agriculture, Forestry, And Fishing	1	0.02%
Metal Mining	Mining	1	0.02%
Railroad Transportation	Transportation, Communications, Electric, Gas, And Sanitary Services	1	0.02%
Administration Of Environmental Quality And Housing Programs	Public Administration	1	0.02%
Data Unavailable	Data Unavailable	1,197	24.11%
Total		4,964	100.00%

The SIC Major Groups highlighted in green in the table belong to the Manufacturing Division, while those highlighted in blue belong to the Services Division.

At this level of analysis, it becomes clear the NPE targets in the Manufacturing Division tend to operate primarily in the electronic equipment and components, computer equipment, measuring and control equipment, and transportation equipment sectors. The automotive industry is likely driving some increase in the manufacturing domain, as additional features associated with connected and smart-cars become prevalent. In the case of the Services Division, the predominant SIC Major Group is Business Services. Prepackaged Software, Computer Programming, Data Processing, and Other Computer Related Services are the industries that make up over 80 percent of the Business Services Major Group.

6.0 NPE TARGETS BY COMPANY SIZE AND PATENT HOLDINGS

6.1 Analysis by Company Size

HTS performed analysis to determine the distribution of NPE target companies for the period 2017 - 2022 by company size, as measured by annual revenues and employee count. To perform this analysis, we used the S&P Capital IQ (Capital IQ) database to secure company information, and then integrated these findings with the NPE litigation data received from Unified Patent.

In 1,518 instances in the annual revenue analysis, and 1,596 instances in the employeecount analysis, the needed company data elements were not available in the Capital IQ database, predominantly because the companies were very small. There were also 857 target companies for which there existed no matching entity in Capital IQ. For these groups of companies, HTS made allocations to the company-size categories by using sampling techniques.

With the reallocation of the instances where data elements were not available in Capital IQ based on our sampling, the adjusted data for NPE targets by revenue category are presented in Figure 7 below. ¹

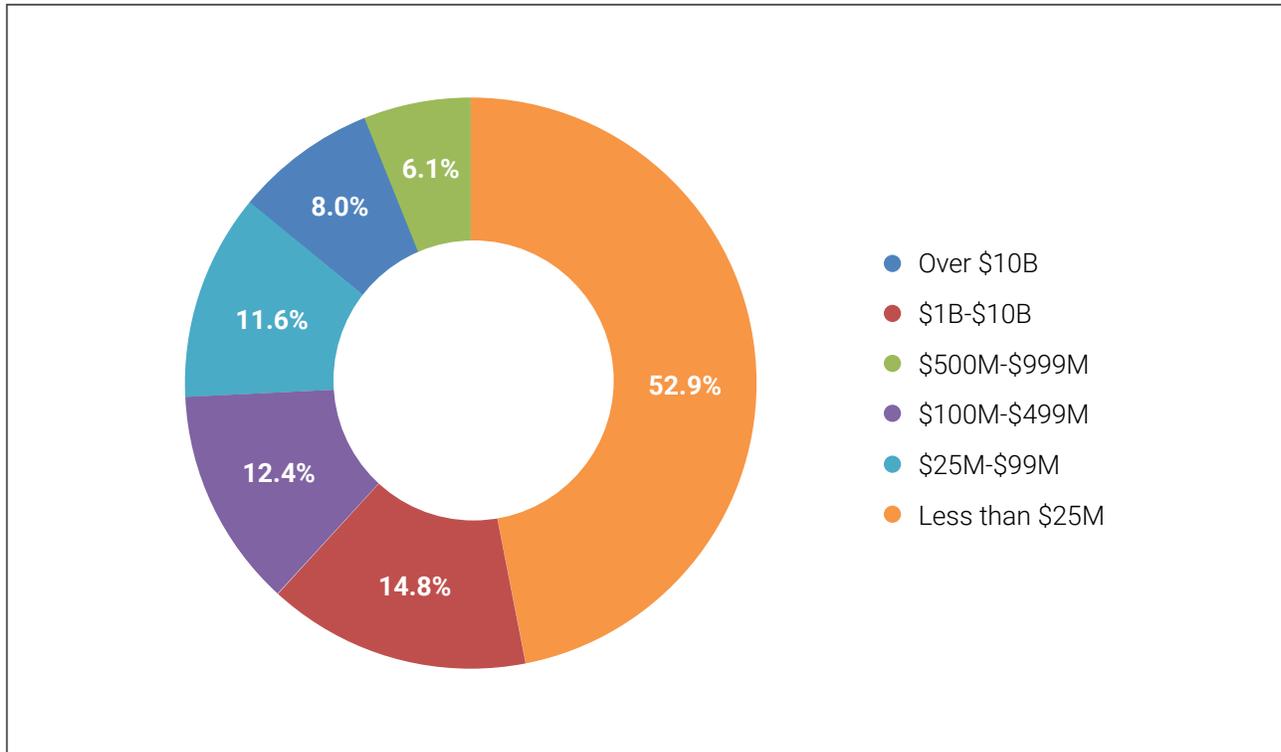
Annual Revenue	Company Count (Raw)	% of Total (Raw)	Company Count (Adjusted)	% of Total (Adjusted)	Average Number of Lawsuits
Over \$10B	417	8.4%	468	8.0%	12.6
\$1B-\$10B	772	15.6%	859	14.8%	4.3
\$500M-\$999M	297	6.0%	355	6.1%	2.9
\$100M-\$499M	601	12.1%	724	12.4%	2.2
\$25M-\$99M	597	12.0%	677	11.6%	2.0
Less than \$25M	762	15.4%	2,737	47.0%	1.6
Data Unavailable	1,518	30.6%	1	0.0%	1.8
Total	4,964	100.0%	5,821	100.0%	3.2

¹ Sampling techniques included an allocation of all instances of companies with 1 or 2 lawsuits to the 'Less than \$25M' based on the assumption that these entities were smaller in size. Of the 91 companies with 3 or more lawsuits in the observation period, HTS conducted additional research and found the following:

Revenue Tranche	Share of reallocated companies
Over \$10B	7.7%
\$1B-\$10B	13.2%
\$500M-\$999M	8.8%
\$100M-\$499M	18.7%
\$25M-\$99M	12.1%
Less than \$25M	38.5%

It should be noted that using these assumptions will result in certain categorical errors resulting from such discrepancies as operating subsidiaries, acquired companies, and incorrectly labeled revenue tranches that may reflect a margin of error of up to 5%.

Figure 7a: NPE Targets by Revenue Tranche (with count adjustments)



While target companies with at least \$1 billion in annual revenue account for over 20 percent of the total, and attract considerably more lawsuits per company than do smaller entities, it is highly significant that 47 percent of NPE lawsuits are actually filed against targets with annual revenues of less than \$25 million. One might hope, as a senior manager in such a small enterprise, that one can fly under the NPE radar, but our analysis indicates that risk is ever-present, even on the small end of the spectrum.

The parallel analysis by headcount indicates that approximately 18 percent of the NPE targets for the period 2017 – 2022 have 5,000 employees or more, while just less than 12 percent have 1,000 – 4,999 employees. The companies with 5,000 employees or more incurred an average of 7.5 NPE lawsuits over the six-year stretch while those in the 1,000 – 4,999 category averaged 2.7.

At the other end of the spectrum, firms with fewer than 100 employees comprised just over 52 percent of the NPE targets, with a total of 3,032 firms. The average number of NPE lawsuits in this category was 2.0.

Data from the analysis by employee count appears in Figure 8.²

Figure 8a: NPE Targets by Number of Employees (with count adjustments)

Total Employees	Company Count (Raw)	% of Total (Raw)	Company Count (Adjusted)	% of Total (Adjusted)	Average Number of Lawsuits
Over 5,000	1,020	20.5%	1,051	18.1%	7.5
1,000 - 4,999	632	12.7%	654	11.2%	2.7
500 - 999	290	5.8%	312	5.4%	2.3
100 - 499	711	14.3%	770	13.2%	2.1
Fewer than 100	715	14.4%	3,032	52.1%	2.0
Data Unavailable	1,596	32.2%	2	0.0%	1.8
Total	4,964	100.0%	5,821	100.0%	3.2

² Sampling of 100 companies for which data were not available in Capital IQ indicated the following:

Revenue Tranche	Share of reallocated companies
Over 5,000	17%
1000 - 5000	12%
500 - 1000	12%
100 - 500	32%
Fewer than 100	26%

6.2 Analysis by Patent Holdings

HTS also categorized the companies targeted by NPE lawsuits during the 2017 – 2022 period by the number of patent families the firms have been granted. The findings of the analysis appear in Figure 9.

Figure 9: Companies Targeted in NPE Lawsuits by Number of Patents Held

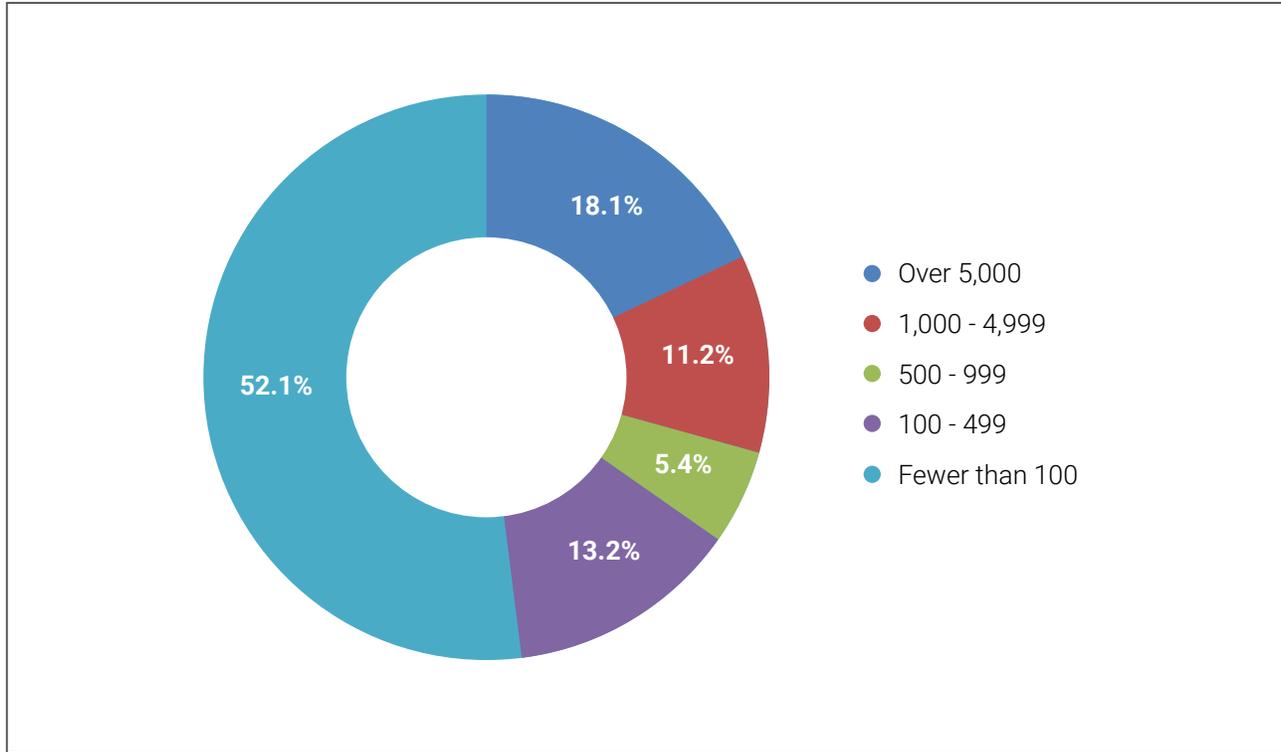
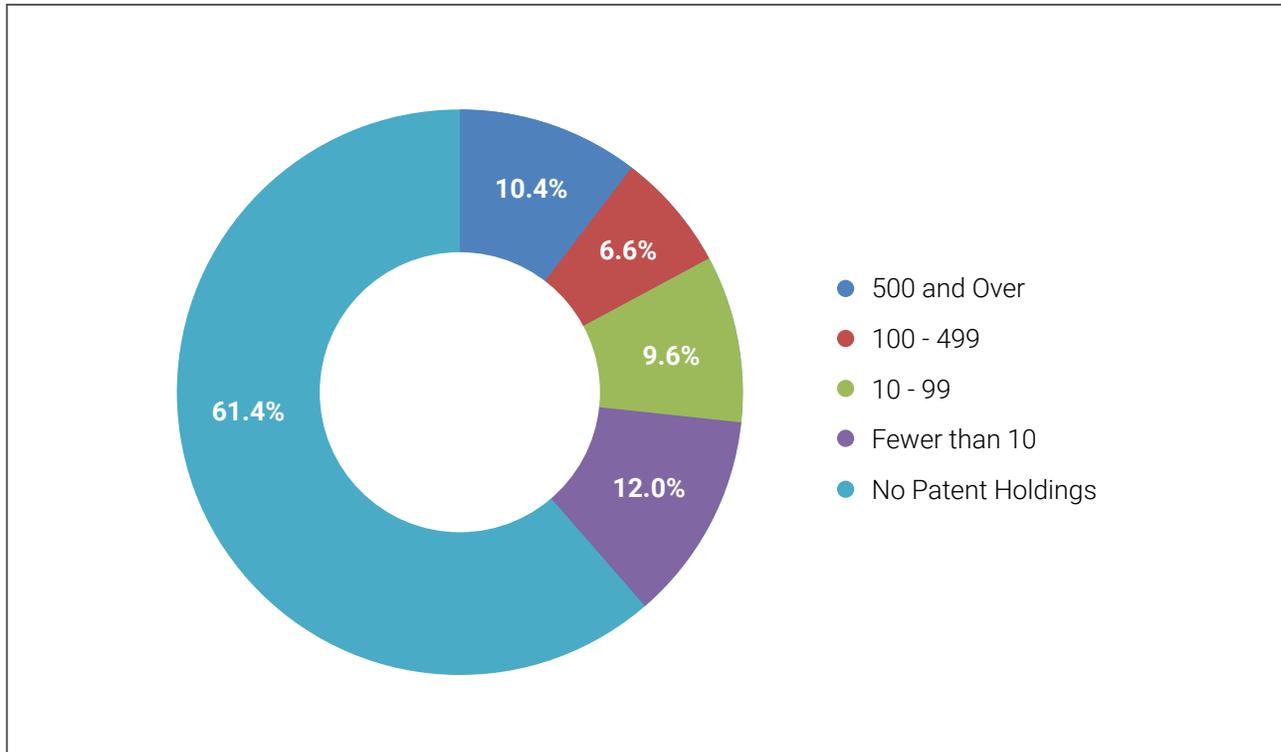


Figure 9: NPE Targets by Number of Patents (with count adjustments)

Total Patent Families	Company Count (Matched in CapIQ)	% of Total (Matched in CapIQ)	Company Count (All NPE Targets)	% of Total (All NPE Targets)
500 and Over	604	12.2%	605	10.4%
100 - 499	386	7.8%	387	6.6%
10 - 99	547	11.0%	557	9.6%
Fewer than 10	669	13.5%	699	12.0%
No Patent Holdings	2,758	55.6%	3,573	61.4%
Total	4,964	100.0%	5,821	100.0%

Figure 9: NPE Targets by Number of Patents (with count adjustments)



It is notable that over 61 percent of the targeted companies hold no patents (3,573 firms), while another 12 percent hold fewer than 10 patent families (699 instances). Companies holding 500 or more patent families represented only 10.4 percent of the NPE targets, despite the fact that these firms typically have larger revenues and broader product offerings.

7.0 THE RELATIONSHIP BETWEEN TARGET IPOs AND NPE LITIGATION

Using data from the Capital IQ database regarding Initial Public Offerings (IPOs), HTS performed analysis to explore the hypothesis that NPEs may in some cases time their filings of lawsuits to target firms that are known to be approaching an IPO, or that have just completed an IPO. The thinking is that companies which are preparing for an IPO seek to settle pending lawsuits, as a means to remove perceived risk among potential investors, and that those which have completed an IPO may subsequently have additional capital available that would make them more attractive as targets.

HTS identified the set of 247 companies among the overall universe of NPE target firms that conducted an IPO during the period 2012 – 2022, and compared the date of the IPO to the date of the filing of the earliest NPE lawsuit against the entity. The data produced by this analysis appear in Figure 10.

Figure 10: Select NPE Litigation (2017 – 2021) and Financial Data (IPOs from 2012 - 2022)

Earliest NPE Litigation vs Company IPO	Company Count (actual)	% of Total (actual)	Company Count (Ult. Parent)	% of Total (Ult. Parent)
Over 5 years after IPO	46	18.6%	75	19.9%
4-5 years after IPO	30	12.1%	41	10.9%
3-4 years after IPO	26	10.5%	35	9.3%
2-3 years after IPO	23	9.3%	34	9.0%
1-2 years after IPO	20	8.1%	33	8.8%
Less than 1 year after	31	12.6%	46	12.2%
Less than 1 year before	31	12.6%	44	11.7%
1-2 years before IPO	13	5.3%	19	5.0%
Over 2 years before IPO	27	10.9%	50	13.3%
Total	247	100.0%	377	100.0%

While approximately 30 percent of the NPE litigation in these cases was initiated four or more years after the conduct of the IPOs – presumably when the target firms had established a more extensive presence in the markets they serve – there is a cluster of cases, comprising approximately 39 percent of the total, where the earliest litigation fell between two years prior to the IPO and two years after. This finding gives support to the hypothesis we were exploring, and means that the period before and after an IPO is a time of elevated risk that a firm will become the target of one or more NPE lawsuits.

8.0 THE RELATIONSHIP BETWEEN FUNDING ROUNDS AND NPE LITIGATION

HTS also sought to explore possible relationships between funding rounds at private/nonpublicly traded companies and the filing of NPE lawsuits, again using data secured from the Capital IQ database. “Funding rounds” would typically involve investments to support the growth of start-ups or other privately held companies by venture capitalists, privateequity firms, or wealthy individual investors.

The hypothesis in this case was that the occurrence of a funding round, which provides the recipient firm with an influx of cash and potentially a heightened profile in the marketplace, would tend to make such companies more attractive targets for NPEs.

The number of companies identified among the universe of those who were targeted by NPEs in the 2017 – 2022 period, which had also received at least one round of new funding during the period, is 303. The findings of the analysis appear in Figure 11.

Figure 11: Summary of NPE Lawsuits Against Private Companies Versus Capital Raise (Funding Rounds Announced 2017 – 2022)

Transaction Date	Company/Defendant Count	Average of Time from Funding to NPE Litigation (Years)	Average Number of Funding Rounds	Average of Funding Round Immediately Prior to Earliest Suit (\$M)	Average of Total Raised Prior to Earliest Suit (\$M)
2017	95	1.31	3.81	\$57.75	\$102.20
2018	84	1.44	3.76	\$61.55	\$83.27
2019	62	0.92	4.31	\$38.40	\$75.51
2020	46	0.63	5.07	\$71.03	\$249.79
2021	16	0.22	3.75	\$106.16	\$199.38
Total	303	1.10	4.09	\$58.84	\$119.03

The decline in the numbers of funding-round recipients who have subsequently been targeted by a NPE lawsuit (see “Company/Defendant Count” in the table), as well as the declining time gaps between funding round and first subsequent NPE litigation, are likely explained by the fact that additional lawsuits will be filed as we move forward into the 2023-2024 period and beyond.

Figure 12 shows the same 303 companies, but now organized by the date of the earliest NPE litigation subsequent to the most recent funding round, as shown by the “Earliest NPE Litigation Date” in the leftmost column of the table.

Figure 12: Summary of NPE Lawsuits Against Private Companies By Earliest NPE Litigation Date (Funding Rounds Announced 2017 – 2022)

Earliest NPE Litigation Date	Company/Defendant Count	Average of Time from Funding to NPE Litigation (Years)	Average Number of Funding Rounds	Average of Funding Round Immediately Prior to Earliest Suit (\$M)	Average of Total Raised Prior to Earliest Suit (\$M)	Average Annual Revenue (\$M)
2021	87	1.58	3.69	\$65.12	\$134.61	\$292.48
2020	71	1.33	4.62	\$62.64	\$154.34	Insufficient Data
2019	75	0.95	4.03	\$41.03	\$75.56	\$675.57
2018	41	0.58	4.05	\$78.24	\$104.51	\$3,954.80
2017	29	0.26	4.17	\$54.67	\$118.78	\$704.31
Total	303	1.10	4.09	\$58.84	\$119.03	\$1,608.46

While the data are not definitive, there is substantial indication that NPEs do take account of the receipt of recent funding rounds by potential targets in making their targeting decisions. It appears that the targets that are most attractive are those that have previously received multiple funding rounds, and have reached at least a C round (which is typically larger than previous rounds). There is also indication that a most-recent funding round of, say, \$50 million plus, makes a potential target more enticing than it would be otherwise. This all makes sense, in that, in business, it is always more attractive to sue a target that has deep pockets, than one known to be scarce of financial resources.

9.0 CONCLUSIONS

This study undertaken by HTS using the NPE litigation data provided by Unified Patents, points to a number of conclusions that serve to begin to answer the study questions we posed (see Section 2).

- A substantial portion of the patents used in NPE litigation over the period 2017 – 2022 (42 percent) and of the lawsuits initiated by NPEs based on these acquired patents (41 percent) derive from relatively small groups of operating companies that on both dimensions represent approximately five percent of the firms whose patents end up being used by NPEs. These companies tend to be large, and to be active participants in the sectors where they do business.
- The operating companies which represent the largest sources of patents used in NPE lawsuits are known. See Section 3 for the lists of the top patent-divesting firms among operating companies.
- The companies most frequently targeted in NPE lawsuits belong to the Manufacturing and Services sectors, as defined by SIC code “Divisions.” Manufacturing targets are comprised primarily of electronic equipment and components, computer equipment, measuring and control equipment, and transportation equipment makers. Prepackaged software, computer programming, data processing, and other computer related services are the SIC Groups that make up over 80 percent of the Services SIC Division targets.
- While large companies (annual revenues of \$1 billion or more) are more likely to be targeted by NPEs than smaller entities, and attract more suits per company, 47 percent of the companies targeted over the period 2017 – 2022 (over 2,730 firms) had annual revenues less than \$25 million. Companies of all sizes are at risk of finding themselves targeted by NPEs in today’s environment.
- There appears to be at least a mild correlation between NPE targeting activity and the occurrence of an IPO (Initial Public Offering) at a target firm. Among firms that conducted an IPO in the period 2012 – 2022 that were the targets of NPE lawsuits between 2017 and 2021, approximately 39 percent of the cases involved NPE lawsuits that were filed from two years prior to two years after the IPO.
- There is indication that the occurrence of a significant funding round does put a privately held company at higher risk for becoming the target of an NPE lawsuit. Better established private firms, where the most recent funding round is a C-round or later, are at highest risk. A funding round of approximately \$50 million or more at this stage appears to make private firms more attractive to NPEs in their searches for targets.

HTS is interested in reader feedback on the content of this study and on the initial conclusions we have drawn.

You may contact us at jcarter@hightech-solutions.com.

[HC – 02/24/2023]

10.0 CITATIONS

- [1] [Q4 in Review: NPE Litigation Holds Steady in 2022 Despite Top Venue Headwinds](#), RPX, January 10, 2023.
- [2] [Q2 in Review: NPE Litigation Rebounds as Vidal Kicks Off PTAB Reform Efforts](#), RPX, July 12, 2022.
- [3] [Litigation Finance Gains Traction in Patent Infringement Cases](#)
- [4] [2022 Patent Dispute Report; 3rd Quarter in Review](#), Unified Patents, October 3, 2022.
- [5] [Ten Reasons Companies Need to Stay on Top of Recent Patent Trends](#), Elizabeth Manno, IP Watchdog, July 22, 2022.
- [6] [Q1 in Review: Patent Litigation Surged as Third-Party Funding Further Unshackled NPEs](#), RPX, April 13, 2021.
- [7] [2022 Patent Dispute Report; 3rd Quarter in Review](#), Unified Patents, October 3, 2022.